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THE PLANT DISEASE REPORTER

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Division of Mycology and Disease Survey

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THE PLANT DISEASE REPORTER

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THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

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FIRST BLISTER RUST FOUND IN CALIFORNIA

W. W. Wagener and J. L. Mielke

For some years those acquainted with white pine blister rust (Cronartium ribicola) in the West have predicted the southward spread of the disease into California where sugar pine (Pinus lambertiana), a susceptible species, is an important timber tree. As early as 1929 members of what was then the Division of Blister Rust Control located the rust on Ribes near the coast in Curry County, Oregon, about fifty miles north of the California State line, but in the intervening years it has not been found south of that area.

On June 29, 1936, the first case of the rust to be reported for California was discovered by the writers near Monumental, Del Norte County, within the boundaries of the Siskiyou National Forest and about a mile and a half south of the California-Oregon line. It consisted of a single branch canker on a young sugar pine. Indications were that the infection leading to the canker had taken place in 1931 or 1932 and that aeciospores had been produced in limited amounts during the past two spring seasons. However no additional infections were found in the vicinity, either on pines or Ribes. The infected branch bearing the canker was removed.

During the same field trip a previously undiscovered infection center of the rust on sugar pine was found in Oregon at Camp Victoria on the Port Orford District of the Siskiyou National Forest. This location is about ten miles east and northeast of the points where the rust was found along the coast in 1929 on Ribes and is approximately eight miles west of the place near Iron Mountain where the first case of blister rust on native sugar pine was found earlier this year by members of the Portland Branch of the Division of Forest Pathology (Plant Disease Reporter 20: No. 10, 173-174 June 1, 1936).

Sugar pine and Ribes cruentum occur in association at Camp Victoria and the rust was found to be present on both. An analysis of eighteen cankers gathered from three young sugar pines there indicated that all had developed from infections occurring in 1932. Several of the cankers had produced aeciospores for two seasons but apparently not in the same abundance characteristic for this stage of the rust on white pines in other sections. The infected bushes of Ribes cruentum bore both uredinia and telia.

Additional sugar pines, which we were not able to examine, occur in the vicinity of Camp Victoria. The persistence of the rust in that district suggests that additional infections on sugar pine occur there,

some probably having become established as early as 1929 when the first rust was found on the coast to the west. Further examination and scouting in this area and to the southward will be necessary to determine the true status of the disease and to indicate whether possibilities exist for delaying the southward spread through control operations. (Division of Forest Pathology).

AN EPIPHYTOTIC OF ALGAL SPOT IN SOUTH FLORIDA

Geo. D. Ruehle

A spot disease due to the partially parasitic alga, Cephaleuros (virescens) mycoidea Karst. is unusually abundant this season, and is prevalent on a wide variety of host plants. In the vicinity of Homestead, Florida, the following hosts have been found to be infected:

Persian lime....	Citrus aurantifolia Swingle
Lemon.....	C. limonia Osbeck
Orange.....	C. sinensis Osbeck
Kumquat.....	Fortunella margarita Swingle
Grapefruit.....	C. paradisi Macf.
Mango.....	Mangifera indica L.
Jujube.....	Zizyphus mauritiana L.
Persimmon.....	Diospyros kaki L.
Common guava....	Psidium guajava L.
pecan.....	Hicoria pecan Brit.
Raisin tree.....	Hovenia dulcis Thunb.
	Myrica faya Ait.
Annatto-tree....	Bixa orellana L.
Acacia.....	Acacia auriculiformis A. Cunn.
Woman's tongue..	Albizzia lebbek Benth.
	Albizzia chinensis (Osb.) Merr.
	Albizzia brownei Walk.
Pongam.....	Pongamia pinnata Wight
Silk Oak.....	Grevillea robusta Cunn.

On the common guava, the spots have been observed only on the leaves. On the mango both the leaves and twigs are attacked, but on all the other hosts the alga has been observed only on the twigs and branches. The disease appears to be of minor importance on most of these hosts. On the Persian lime and on some varieties of lemon, however, the alga is very abundant in some plantings. Large extended areas often more or less completely involving the bark of the main branches have become covered with the reddish-brown hair-like fruiting bodies. Many of the smaller twigs and branches that have been completely girdled appear to be stunted

as a result of this infection. Severe infection on these hosts is particularly dangerous since the tissues attacked by the alga may offer a means of entrance for more dangerous parasites, such as Diplodia or Diaporthe citri. The alga is also causing stunting and in some cases apparently the death of smaller twigs and branches of Bixa orellana, Myrica faya, and Acacia auriculiformis.

The rapid spread and development of the alga was doubtless the result of the frequent and abundant rains which have occurred in this area since June 1. The precipitation during the month of June was approximately 25 inches, which is considerably above the average for this period. (Sub-Tropical Experiment Station, Florida Agricultural Experiment Station, July 13.)

TOMATO DISEASES DESTRUCTIVE IN MISSISSIPPI DROUGHT A CONTRIBUTING FACTOR

Paul R. Miller

Diseases have been unusually destructive to tomatoes in Copiah County this year, while peas, beans, and cabbage suffered a relatively small amount of damage. This statement may be reflected in the fact that tomato shipments fell short this year whereas the yield of the other crops was above normal.

The approximate tomato acreage this season was 9,700, from which about 2,000 car loads were shipped from Crystal Springs, Hazelhurst, and Terry.

Weather conditions, especially during the latter part of the growing season, were unfavorable for tomatoes. The month of May received 3.3 inches of rainfall which was 1.89 inches below normal, and June, the critical period, received only 0.92 inches, all of which fell during one day (June 23) and which was 3.5 inches below normal. During the ripening season temperatures were abnormally high, the daily maximum ranging from 90° to 104° F. the last fifteen days of June.

The principal variety grown is Gulf State. Most of the growers apply from 1,200 to 2,000 pounds of 4N-8P-4K fertilizer per acre. The plants are topped to three, four, or five clusters and pruned severely to hasten maturity and increase size at the expense of total quantity. The crop is packed in the Western lug-box as "Green wraps".

Rows from eighty fields comprising approximately 2,000 acres were selected at random and surveyed for diseases, and in addition several days were spent at the packing sheds to obtain information on the amount and cause of culls.

Blossom-end rot (called black rot locally) was by far the most destructive disease. Extensive counts made in the eighty fields showed all of them to have from 5 to 90 percent of the fruits affected with a weighted average of 25 percent loss. The disease was apparent on the earliest tomatoes and gradually became more damaging as the season progressed. It was much more prevalent on the higher lighter soils and seemed to be more abundant in fields receiving the heaviest applications of fertilizer. By cutting hundreds of fruits with no external symptoms from clusters showing blossom-end rot it was found in numerous cases that disintegration starts from the inside and may never become apparent externally, even on ripening. Several fields were observed where a few rows had not been topped or pruned, and in all cases it was obvious that there was considerably less blossom-end rot on these plants. Based upon field observation it seemed evident that severe pruning and topping, especially during drought seasons, may contribute toward the severity of this trouble.

Beginning about mid-season a type of abnormality was observed on tomatoes which was more prevalent on the blossom end, but sometimes occurred on the side or stem end, and frequently was apparent only internally with the exception of a slight tendency toward puffiness. The fruits first showed small, water-soaked areas, some of which later turned brown and increased to include one-half of the fruit. No marked shriveling was observed as these fruits matured as is true of blossom-end rot. No macroscopic evidence of a fungus was seen on these fruits. In some fields late in the season as much as 10 percent of the fruits showed these symptoms. It was especially noticeable on the upper clusters. In many respects this trouble resembled the disease described by Elsbeth E. Warner, (Black rot of tomato, Lycopersicum esculentum, caused by Alternaria sp., Phytopathology 26:530-549. June 1936.)

Fusarium wilt (Fusarium lycopersici) was observed in thirty-four of the eighty fields examined, varying in amount from a trace to 25 percent with an average of about 4 percent.

Bacterial wilt (Bacterium solanacearum) was found in fifteen fields, varying from 3 to 75 percent, with a weighted average of about 5 percent for the fifteen fields.

Mosaic (Virus) seemed conspicuous by its almost complete absence, as it was observed in only four of the eighty fields inspected, and in none of these fields was there more than a trace. It was not seen on the fruit in the field or at the packing sheds.

Root knot (Heterodera marioni) was noticeable upon pulling a few plants in selected rows in thirty-two fields. However, no effort was made to estimate the percentage of plants infected.

Early blight (Alternaria solani). Fifty of the eighty fields showed leaf spotting, varying in amounts from 1 to 100 percent of the plants infected. In most cases only the lower leaves were infected. Two fields, however, showed severe spotting on all of the leaves and stems, which probably reduced the yield considerably. Positive fruit infection was not seen, but it was reported by some of the growers.

Stem rot (Sclerotium rolfsii) was found in seven fields but in only one was more than 3 percent of the plants infected. This was a low, sandy field of approximately two acres.

Septoria leaf spot (Septoria lycopersici) was generally observed in all fields, but the weather was too hot and dry for it to be very abundant or destructive.

Late blight (Phytophthora infestans). What was thought to be late blight was found on about 2 percent of the plants in a four-acre field.

Bacterial canker (Aplanobacter michiganense) was found in seven fields varying from a trace to 10 percent of the plants, but apparently it did little damage. This disease was frequently seen on the fruit at the packing sheds but not in sufficient quantities to disqualify tomatoes for the U. S. #1 grade.

Bacterial spot (Bacterium vesicatorium) and bacterial speck (B. punctulans Bryan) were seen in the fields and in the cull tomatoes at the packing sheds occasionally.

Catface, growth cracks (stem cracks) and sunscald were observed in all fields inspected, and in addition the three combined probably caused about 3 percent culls at the packing sheds. This estimate is based upon daily counts of the culls as compared with the shed foreman's total daily buying receipts.

Cloudy spot (unknown). Light colored, almost whitish blotches, irregular in shape, and appearing in the flesh under the epidermis were generally observed to be abundant in most of the fields, and frequently at the packing sheds. The spots sometimes aggregated over three-eighths of an inch which was sufficient area to score against a lot for the U. S. #1 grade.

As shown in Table 27 it is estimated that 35 percent of the tomato crop of Copiah County this season was lost. This figure could only have been obtained by keeping in close contact with the tomato fields from the time of transplanting until harvest, and by making intensive and extensive observations as well as many counts.

Table 27. Losses of tomatoes caused by diseases in Copiah County, Mississippi, 1936. 1/

Disease	Cause	Estimated loss percent
Blossom-end Rot (Black rot)	Physiological	25
Fusarium wilt	Fusarium lycopersici	1
Bacterial wilt	Bacterium solanacearum	1
Early blight	Alternaria solani	1
Septoria leaf spot	Septoria lycopersici	0.5
Late blight	Phytophthora infestans	Trace
Mosaic	Virus	Trace
Root knot	Heterodera marioni	Trace
Stem rot	Sclerotium rolfsii	Trace
Cloudy spot	Unknown	0.2
Bacterial canker Bacterial spot Bacterial speck	Aplanobacter michiganense Bacterium vesicatorium Bacterium punctulans	0.3
Cat face Stem crack Sun scald	Physiological	3.
Worms Puffiness Bruises Other abnormalities		3.
TOTAL		35.

1/ These estimates include both field and packing shed counts. (Division of Mycology and Disease Survey.)

CURLY TOP OF TOMATO IN UTAH

H. L. Blood

Curly top of the tomato has again made its appearance in the Utah tomato fields, for the third consecutive year. Early indications are that the disease is likely to become serious in certain districts, although perhaps not so serious as it was during the past two years. On June 26 fields in the Hooper, West Point, and Syracuse districts showed from 5 to 15 percent disease, whereas at that date in 1934 the average infection for those districts was approximately 38 percent and in 1935 approximately 45 percent.

An exceptionally hot dry period which has prevailed since early in June is favoring the rapid development of the disease. It is believed that the insect population is not so great this year as it was during the past two years and for this reason some hope is felt that the disease will develop to less serious proportions than it did during 1934 and 1935. It is evident, however, that the disease will cause considerable loss in the western portion of the strip of irrigated lands between the Great Salt Lake and the Wasatch mountain range. (See The Utah Tomato Disease Situation in 1935, Plant Disease Reporter 20:Fig. 23, Apr. 1, 1936.)

An exceptional occurrence of curly top has made its appearance on the Mapleton Bench east of Springville and Spanish Fork in Utah County. The disease has developed in approximately 5 percent of the tomatoes planted in the district, which is more than appeared in that district last year. (Division of Fruit and Vegetable Crops and Diseases.)

OTHER REPORTS ON TOMATO DISEASES

SPOTTED WILT (VIRUS)IN NEW YORK: Spotted wilt has been found in one field in Ulster County and reported from others. Losses in the one field visited are very heavy. (C. G. Small, New York State College of Agriculture Weekly News Letter, July 27.)

BACTERIAL CANKER IN VIRGINIA: During the last two weeks bacterial canker (Aplanobacter michiganense) has been found in tomato fields in Accomac and Norfolk counties. In all cases the growers have stated that the plants came from Georgia and one grower said that his plants were certified.

In one field containing three varieties the disease was confined to Rutgers and had caused the death of about 50 percent of the plants of that variety. In another field the disease was localized more or less in one area which the grower said was correlated with certain crates of plants. Losses in the various fields ranged from a trace to 50 percent of the plants. (Harold T. Cook, Virginia Truck Experiment Station, July 14.)

TOBACCO DISEASES IN NORTH CAROLINA

Luther Shaw

An unusually severe epidemic of sore shank, apparently caused by Rhizoctonia spp. has developed on tobacco in North Carolina during the current season. We have observed a few fields in the State in which almost 100 percent of the plants were affected by the disease. On the other hand, Mosaic (virus) has been unusually light this year. This is in striking contrast to the severe epidemic that was experienced in the State in 1935. Only a very few fields have been found in which early infection with mosaic had taken place. Subsequent spread has been relatively slight to date. (Extension Plant Pathologist and Chairman, Tobacco Disease Survey Committee, July 27.)

VARIOUS REPORTS ON PLANT DISEASES

SOUTHERN WILT OF EGGPLANT IN VIRGINIA: Sclerotium rolfsii caused the death of 32 percent of the plants in one five-acre field. Few sclerotia were present because of the dry weather that has prevailed during the last few weeks. (Harold T. Cook, Virginia Truck Experiment Station, July 9.)

BLACK KNOT ON PRUNE IN NEW YORK: Rather heavy infections of black knot (Plowrightia morbosa) are apparent in some prune orchards in Monroe County where infection has been light in previous years. (R. S. Granger, New York State College of Agriculture Weekly News Letter, July 20.)

BACTERIAL WILT OF SWEET CORN ON LONG ISLAND: Bacterial wilt (Aplanobacter stewarti) of sweet corn in Nassau County is not as bad as last year. Sixteen percent on susceptible varieties; less than 4 percent on wilt-resistant hybrids. (M. C. Richards, New York State College of Agriculture Weekly News Letter, July 20.)

MOSAIC-LIKE TROUBLE OF ELM IN VIRGINIA: Two elm trees were found in Portsmouth, Virginia, that were affected with what appeared to be mosaic. When examined, the leaves showed a typical mosaic mottling. The owner reported that earlier many of the leaves on the trees had turned yellow and dropped off. (Harold T. Cook, Virginia Truck Experiment Station, May 26.)